GAS JOURNAL

Vol. 255 July 28, 1948 No. 4443

A SUBSTANTIAL SAVING

IN these days of continuing austerity nothing which promises greater economy with efficiency can be lightly ignored. The carbonizing industries treat 45 mill. tons of coal and produce 25 mill. tons of coke per annum, and allowing for the ash and oxide of iron, the total tonnage to be unloaded, conveyed, elevated, and loaded, approaches if not exceeds 100 mill. tons. This tonnage brings the industries high on the list of those whose finances and success can be assisted by mechanization. A shilling a ton represents £5 mill. per annum, a not inconsiderable or impossible saving, particularly when it is borne in mind that there have been cases where suitable tippling and elevating plant has saved up to 2s. 6d. per ton net. Mr. W. Morland Fox rendered the industries a greatly appreciated service last week when, at the first national Mechanical Handling Exhibtion and Convention at Olympia, he presented a paper on "Mechanical Handling at Gas-Works and Coke Ovens," in which he emphasized that it is essential that the gas and coke oven industries should do their utmost to economize in labour, so as to release men to those industries which produce in international competition and for export.

The full use of mechanical handling plant can assist in the achievement of this objective as much as, if not more than, any other combination of development. Conveyors are labour aiding as well as labour saving machines, but as with all other mechanical plant, can be either good servants or bad masters. The installation of mechanical handling plant cannot be done haphazardly. The development and design of such plant has been the study of specialists for almost 100 years, and this accumulated experience is always at the service of users. When he wrote his paper early in the year Mr. Morland Fox refrained from giving any detailed figures of estimated or actual labour saving by the use of mechanical handling plant on the grounds that as a manufacturer he might be more biassed and possibly less accurately informed than a user. In February, Mr. J. D. C. Woodall, Engineer and Manager of the Maidstone Gas Company, gave his paper on "Material Handling in a Provincial Gas-Works" to the Southern Association of Gas Engineers and Managers, and he and the contributors to the discussion gave definite figures of labour saving resulting from mechanization—figures which substantiated the general claims now put forward by Mr. Morland Fox.

Last week's author emphasized that the saving of unskilled labour resulting from the installation of mechanical handling plant must be offset slightly by the increased use of skilled or semi-skilled labour for its proper and efficient maintenance. Manufacturers give considerable thought to designing their machines for easy maintenance, and neglect by the user of this important work will invariably result in unnecessary and expensive operating and renewal costs. Regular lubrication is, of course, the greatest factor, and even this has been wholly or partially mechanized. An interesting aspect of the discussion—which we report elsewhere in this issue—was the estimate as to the capital expenditure equivalent of reducing the labour force by one man. That factor obviously varies according to the availability of labour, the wage required, and the degree of willingness to undertake "dirty" work. Mr. W. S. Hubbard, of Liverpool, put it as high as £4,000, but Mr. Morland Fox inclined to the view that the £3,750 estimated by Mr. W. A. Howie in his comments on Mr. Woodall's paper was a more reasonable figure.

Mr. Morland Fox's paper was one of a series of 17 dealing with mechanical handling in a wide variety of industries in conjunction with an exhibition which, as we said last week, was designed to give the world a representative picture of the equipment now being made in this country. To cover both sides of the question, some of the papers were by expert mechanical handling engineers, others by executives or firms and organizations which are large users of mechanical handling equipment.

THE GAS BILL

THE Gas Bill was further considered in Report Stage in the House of Lords last week, when three major items under discussion concerned the constitution of Area Boards and the Gas Council, and co-partnership schemes. On the first question Lord Balfour of Inchrye moved an amendment that not less than three members of the Board, including the chairman and deputy chairman, or one of them, should render whole-time service to the Board. To this the Lord Chancellor said that the Minister of Fuel and Power intended to act on the lines suggested in the amendment, but was anxious that neither himself nor his successors should be legally bound in the matter. The amendment was carried by 47 votes to 22—majority against the Government, 25. Viscount Jowitt moved an amendment that the Minister should appoint two of the members of each of the Area Boards to be chairman and deputy chairman respectively, and either of them in the case of each Board should be a person appearing to the Minister to have had experience of, and shown capacity in, gas supply. The amendment was agreed to.

On the question of co-partnership, Viscount Cecil moved an amendment to provide that existing schemes for promoting industrial co-operation between employers and employed in the industry should be continued for a period after the vesting date in the same way that profit-sharing schemes might be continued. Viscount Jowitt resisted the amendment, saying he anticipated that profit-sharing schemes might go on, with modifications, for an indefinite period. He did not know what "industrial co-operation" meant in practice. He proposed to move an amendment later, providing that profit-sharing schemes which might be continued could include provisions relating to welfare and amenities. The Marquess of Salisbury said that the Government were asked to do what they could practically do to continue the machinery for promoting industrial co-operation between employers and employed. Surely the Government did not want to turn

that down? The Government would put themselves in a very false position if they would not accept this amendment. The amendment was carried against the Government by 40 votes to 17—majority 23.

The third important item was an amendment moved by Lord Lucas of Chilworth, and agreed to, to insert after Clause 61 the following new clause: (1) "All property, rights, liabilities, and obligations which immediately before the vesting date were property, rights, liabilities, and obligations of any of the following bodies: (*a*) the British Gas Council; (*b*) the Federation of Gas Employers; (*c*) the National Federation of Gas Coke Associations, and every constituent Association of that Federation; and (*d*) the Association of Gas Corporations, shall on the vesting date vest by virtue of this Act and without further assurance in the Gas Council. (2) Sub-sections (3) to (8) of section 17, 22, 58, and 60 of this Act shall, so far as applicable, apply in relation to every such body as aforesaid as if that body were an undertaker to whom Part II of this Act applies. . ."

Prior to these items of discussion, the Lord Chancellor moved an amendment, which was agreed to, to the effect that no Area Board should manufacture plant and gas fittings and coke fittings, "unless they are satisfied that the available facilities for obtaining at reasonable prices plant required by them or any other Area Board, or gas fittings or coke fittings, are or may become inadequate." Among further amendments was one moved by Lord Buckmaster specifically to exclude composite companies from the provisions of Clause 25, which, as it stood, would extinguish those companies' gas investments. This amendment was accepted without discussion. Another Opposition amendment was also accepted which extended the time limit during which directors were able to declare bigger dividends than allowed under the Bill, without becoming personally liable for the excess, from Jan. 23, 1948, to Feb. 13 last. A form of words was found to satisfy all parties regarding the disclaimer clause, which will allow the Boards to disclaim contracts that have not been made within the ordinary course of business. On the question of compensation to officers of gas undertakings, the farthest the Lord Chancellor would go was to promise that regulations would be laid before Parliament not later than six months after Vesting Day. A suggestion by Lord Balfour of Inchrye that they should be made by the Vesting Day the Lord Chancellor rejected, though assuring the Peers that six months was a limit and that he hoped that the regulations would be issued "much earlier." Viscount Jowitt also assured the House that due regard would be had to the wishes of persons entitled to participate in profits under co-partnership schemes, and said that this would be done by regulation. This completed the Report Stage of the Bill, which was read a Third Time on Wednesday last.

This week the Lords will again consider the Bill, recommitted by the Commons. There are rumours, which we are inclined to discount, that if the amendments passed by the House of Lords against the Government are removed, the Lords may decide to reinsert the amendments. If this decision is acted upon, the Government will no doubt invoke the aid of the new Parliament Act to over-ride the Lords' veto at the close of 1949. The consequences of such delay are difficult to contemplate, but any such course would prolong existing tension and understandable anxiety among the existing personnel of the gas industry, greatly to the detriment of gas development and service.

A SPECIALIZED FILM ON DISTRIBUTION

It will be recalled that in the "GAS JOURNAL" of Dec. 10, 1947, we published an illustrated article by Mr. Frederick Bell, Distributing Engineer to the Liverpool Gas Company, on "Service Cut-offs in One Foot Square Holes." The practice he described has been adopted by American gas undertakings, and following a visit to the States Mr. Bell introduced the method at Liverpool. He is enthusiastic concerning its advantages, which were set out in the article referred to —which he concluded, by the way, thus: "Liverpool has been using the method very successfully; no snags have developed, and we can confidently recommend its general adoption." While in Chicago Mr. Bell secured a pictorial record of the method and also of other features of American gas distribution practice, and to this the Liverpool Gas Company has added a sound commentary. The film was shown to a small gathering at Gas Industry House last week, and we found it interesting and entertaining—and certainly provocative. As the heading of this short note states, the film is essentially a specialized one, very different from those of a general character, produced for general audiences, distributed by the British Gas Council. It is nevertheless, a film which the technical personnel of gas undertakings should have the opportunity of seeing, whatever their opinions on the subject. It is a type of film which could be amplified to good purpose in other directions of technical development. It is a film which should arouse the interest of both senior and junior gas associations, and it could to advantage be put on as a sort of addendum to distribution papers presented at meetings. Incidentally, it constitutes another example of Liverpool's enterprise. We hope to see more of such ventures; they have high potential.

WHY NOT WORK?

We have just read a booklet written with fervour and conviction by Frederick Marsden. It is published by Riddle, Smith, and Duffus, Ltd., from whom copies may be obtained (5d. each). The title is arresting: "Stop—We Are On the Wrong Road." An alternative title might well be "Listen—Here is the Right Road." The author is disquieted about lack of reasonable endeavour which, he is certain —he has responsibilities and has travelled—characterizes the working fibre of Britain to-day. Incentives, he maintains (and we agree with him) are to be found in appreciation of moral values, not merely in the pay packet. A 40-hour week he regards as farcical; the solution of our difficulties lies—we quote—"in work, more work, and harder work." Individuals who want to work, he argues, are pulled down by their mates to a norm out of relation to world production, world markets and world needs. Those incapable of doing an honest day's work should allow others who are capable of effort to enjoy the fruits of their toil—a few luxuries which add spice and zest to life and, in fact, stimulate, not stupefy, the mind, and fortify self-respect and well-being. The author believes that many people are afraid of doing something for which they are not paid. In other words, that the spirit abroad in this country is pretty low and somewhat disgusting. He contends: "If you are going to have this equality-for-all principle regardless of merit, this State-controlled industry, and so on, you are doing the gravest injustice to your children that anyone could do to them." All for the sake of what? Social security? Mr. Marsden quotes Shakespeare: "And you all know, security is mortal's chiefest enemy." What the author seems to overlook is that Great Britain, as a civilized nation which in thought, culture, and social awareness has in many directions led—and continues to lead—other countries, including America, is perpetually going through an anxious teething-stage; one crisis follows a previous crisis and presages another; adjustment follows maladjustment; the spirit of liberty remains. It is so easy to point to the ill-effects—and the ill-effects are apparent and real—of an endeavour to educate those who have, to put it bluntly, never had their minds considered. Progress in this regard —true progress—will take many centuries after our own short tenure of this earth is finished and forgotten. But in the endeavour lies hope, without which life is meaningless. Mr. Marsden wanted his booklet to be provocative. We think he has succeeded. And of course we must work.

A CONSUMERS' WATCHDOG

There is a great deal in common between the reports for the year ended June 30 of the Industrial Coal Consumers Council and the Domestic Coal Consumers Council, issued last Friday (H.M. Stationery Office, 4d.). Both reports accord support for the policy of the National Coal Board, but both emphasize the need for an early improvement in quality and express the hope that the improved working conditions and status of the miner will lead to an increased output of cleaner and cheaper coal. The Industrial Consumers Council, of which Sir Ernest Smith is Chairman, remarked that it had believed that the easing of coal supplies in the spring of this year would be the beginning of a permanent improvement in fuel supplies, but results had not equalled expectation. A general statement had been received from the Coal Board on the plans for increasing production; and more details of the causes of low output, which persisted in spite of heavy expenditure on mechanization, had been promised. The report signed by Sir Ernest Smith states that the principal matters

which have been discussed include (1) the organization and plans of the Board for increased production and better service to the consumer; (2) consultation between the Board and organised consumers; (3) the machinery for controlling coal supplies and prices; (4) the efficient use of available fuel supplies; (5) and special distribution arrangements to overcome temporary transport difficulties. "Not only have the Board been at considerable pains to make available full details of their organization and methods but they have readily undertaken to consult the Council on matters of policy, wherever that is practicable and useful (to the consumer), before decisions are reached." It is regarded as a matter of prime importance that, as soon as possible, the consumer should be able to select and obtain the type of coal which will enable his process to be carried out most effectually and with the maximum economy of fuel; and the Committee is in full agreement with the Board's intention to adopt the recommendations of the Coal Grading Committee of the British Colliery Owners' Research Association on the size grading of British coals, which is a first and modest step towards a rationalized classification and, ultimately, the proposed new price structure. Again, attention has been drawn to the need for making proper allowance at the collieries for surplus moisture in washed coals. A review is being undertaken of varying practices in different parts of the country with a view to the establishment, in consultation with the Council, of a national code of practice. The provision of cleaner coal, it is emphasized, is important to the gas industry. "We recognize, however, that in other directions, and especially from the long-term aspect, there is a limit beyond which the cleaning of coal may be so expensive as to justify the provision of consumers' plant for the use of low-grade coal." On Friday last Sir Ernest Smith expressed concern that coke ovens had fallen into disrepair, and predicted that, unless there was an improved supply of silica bricks for the ovens, the steel industry would be seriously affected by a shortage of coke within the next 12 months.

The report of the Domestic Coal Consumers Council, of which Dame Vera Laughton Mathews is Chairman, says that the chief cause of complaint among domestic consumers is not so much the shortage, which is more acutely felt in some areas than others, particularly where gas and electricity are not available, but the quality of much of the coal which is supplied; and the Council, so long as it is unavoidable for the household market to be supplied with a substantial amount of inferior or poorly prepared coal, is anxious that such coal should be spread as widely as possible among all consumers. It does not consider that the offer of untreated smalls outside the "ration" is an effective substitute for an adequate supply of large coal. There is no doubt, however, that the domestic consumer will be supplied with a larger proportion of inferior coal.

Personal

Mr. DAVID GILLESPIE, of Cardenden, Fife, has succeeded Mr. JAMES MORRISON as Manager of Fauldhouse Gas Company. Mr. Morrison now occupies a similar post at Dunbar.

* * *

Mr. S. W. P. NELSON, Industrial Representative with Middlesbrough Gas Department, has been appointed Distribution Superintendent with the Hartlepool Gas and Water Company.

* * *

Mr. P. R. R. STEAD is now Manager of the Meltham U.D.C. Gas Department in succession to Mr. F. Beaumont, who left some months ago to become Engineer and Manager of the Mablethorpe and Sutton Gas Company.

* * *

Engineer Vice-Admiral Sir HAROLD BROWN, Chairman of the Fuel Research Board, has accepted an invitation to become President of the British Internal Combustion Engine Manufacturers' Association, in succession to the late Viscount Bennett.

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Mr. JOHN D. WRIGHT has been appointed South-Western Area Sales Representative to Maxol Heaters, Ltd., Manchester. Mr. Wright went to the West Country in 1932, when he left the Stanton Ironworks, Ltd., Nottingham, to join Renwick, Wilton, & Dobson, Ltd., Torquay. Already well known to many gas engineers in the West Country, Mr. Wright will be widening his sphere of friends.

* * *

Two retirements from the Glossop Gas Company have brought to an end a combined service of 100 years. Mr. BEN GODDARD, Engineer and Manager, has been with the Company for 50½ years, and Mr. WALTER TOWNEND, Secretary, has been there 49½ years. Both were with the Company as young men when in 1900, to popularize a new mantle, it promised to light a square in the town free of charge for 12 months, agreeing that if the mantle proved a failure it would revert to the old "fish tail." Mr. Goddard started as a fitter in 1908 and studied gas production at Manchester College of Technology. He planned and installed mechanical hand-stoking and charging in the works, and during the general strike of 1926 was appointed Fuel Controller for Glossop. The Company is 103 years old, and these two officials have seen production rise from 58 mill. cu.ft. in 1900 to 210 mill. cu.ft. to-day. Mr. Goddard is succeeded by Mr. M. HAMSHAW, B.Sc.(Leeds), who has been Assistant Manager for the past two years. Mr. Townend's successor is Mr. R. DYSON, who has been with the Company for 43 years.

Obituary

Philip G. G. Moon

We announce with regret the death of Mr. PHILIP G. G. MOON, O.B.E., M.I.C.E., F.C.S., Resident Director of the Bournemouth Gas and Water Company, which occurred suddenly on the evening of July 21. Mr. Moon went to Bournemouth from Norwich as Assistant Engineer and General Manager some 45 years ago in succession to the late Sir Arthur Duckham, who left to found the Woodall-Duckham Vertical Retort Company. In 1920 Mr. Moon was appointed to succeed Colonel H. W. Woodall as Engineer and General Manager, and was given a seat on the Board on his retirement in 1941. During his long service with the Company Mr. Moon was closely connected with the activities of the gas industry in every direction and also with the general social, sporting, and business life of Bournemouth and Poole. He was keenly interested in hospital work and for many years was Chairman of the House Committee of the Royal Victoria and West Hants Hospital until it was taken over by the State early this month. He was a founder-member of the Bournemouth Little Theatre and was keenly interested in many sports clubs in the district, in addition to being Chairman of all the Gas Company's Sports Sections. In earlier days he was a very keen golfer.

He was a member of the Institution of Civil Engineers, the Institution of Gas Engineers, the Chemical Society, and the Institution of Water Engineers. Among his many activities he was a member of the Executive Committee of the British Gas Council; Chairman of the South Western Tar Distilleries; Director of Prince Regent Chemicals; member of the Gas Research Board; member of the Poole Harbour Commissioners; member of the Tar Research Board; member of the Bournemouth Publicity Committee; and Chairman of the Southern Region Gas Engineering Advisory Board. During the war a large plant for the manufacture of hydrogen, the first of its kind, for filling barrage balloons was erected at Poole Gas-works, and for the valuable work he did in connexion with making this plant an outstanding success he was awarded the O.B.E.

Since the war Mr. Moon has been actively engaged in the design and construction of a large new waterworks situated on the River Avon and it is sad to think that he was not destined to see the fruition of a project to which he had given so much thought and energy. The work he did in connexion with the completion and starting up of the new gas-works on Poole Quay and the design and construction of the subsequent new works at Pitwines will ensure that his memory will never be forgotten in the Bournemouth gas undertaking. Every sympathy will go out to his widow, who is well-known in charitable circles in Poole, and to his daughter, Mrs. Hamilton Lloyd, of St. Gerrans, Cornwall.

The funeral service was held at St. Peter's Church, Parkstone on Monday, followed by a private service at the Bournemouth Crematorium.

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The death has occurred at Chobham, Surrey, of Mr. C. M. MCPHERSON, Engineer and Manager of the Clay Cross Gas Company, Ltd. Prior to his appointment at Clay Cross in 1912 Mr. McPherson was with the Birmingham Gas Department at the Nechells Works.

Letters to the Editor

Expansion at Nottingham

DEAR SIR,—I note that under the heading "Extraordinary Expansion at Nottingham," in the "JOURNAL" of July 14, the Chairman of the Nottingham Corporation Gas Committee is reported as having stated at a luncheon that we are having to pay 4s. 4d. per 1,000 cu.ft. for gas supplied to us by the Derby Gas Company.

I should like to correct this report, as the average price paid to them during the 12 months ending Mar. 31 was less than 3s. per 1,000 cu.ft.

My Committee is very appreciative of the help received from the Derby Gas Company in maintaining a supply of gas to Nottingham over a very considerable period, and I should be pleased if you will publish this letter in order to nullify any harmful impressions which may have been created by the remarks quoted.

Yours faithfully,

R. M. WILKINSON,
Engineer and Manager.

City of Nottingham Gas Department,
51-55, Lower Parliament Street,
Nottingham.
July 19, 1948.

Letters to the Editor (continued)

Institution Discussions

DEAR SIR,—The letter from "Constructive Critic" in your issue of July 7 has stirred me to say that while sympathizing with his feelings of frustration, I consider that his critical construction does not go far enough.

The problem, to my mind, is not how to restrain the senior members of the Institution (and why should they be restrained?) but rather to provide the opportunity for *any* member to take part in discussion if he so desires, with as much time as he reasonably requires. The system of taking a paper as read, and the restriction of time as practised at previous meetings, do not meet the problem. At least one other national body has an arrangement whereby regional groups meet for discussion of a paper presented to each group in turn. If this could be adopted by the Institution, regional discussions could follow the formal presentation of papers at Institution meetings, and condensed reports, with replies from the authors, could then be embodied in the Transactions.

The gas industry will soon be regionalized. Why not the Institution of Gas Engineers?

Yours faithfully,
W. M. PATERSON.

Brighton, Hove, and Worthing Gas Company,
77, West Street, Brighton.
July 13, 1948.

Diary

Sept. 14.—**Federation of Gas Employers**: Central Committee, Gas Industry House.

Sept. 14-15.—**Irish Association of Gas Managers**: Annual Meeting, Cork.

Sept. 22-23.—**Wales and Monmouthshire Association of Gas Engineers and Managers**: Autumn general meeting, Newport.

FUEL EFFICIENCY COMMITTEE

The Fuel Efficiency Committee of the Ministry of Fuel and Power at a meeting on July 20 welcomed the decision of the Minister to hold, in 1949, a conference on the general lines of the "Fuel and the Future" conference held in London in October, 1946. Among other questions the Committee discussed suggestions that further surveys should be made of fuel and power consumption per unit of output in various industries and agreed that a number of such investigations should be carried out under the guidance of Regional Fuel Efficiency Committees. It was also pointed out that there was considerable room for higher efficiency in the use of fuel and power in drying processes throughout industry, and the Committee concluded that all Regional Fuel Efficiency Committees should be invited to look into this problem as it affected industries within their regions.

Recognizing the importance of adopting methods of using lower grade fuels in industry the Committee emphasized the importance in this connexion of the closest relationships between users and the suppliers. There was general agreement on the need for maintaining and extending fuel watching and of applying the methods of joint consultation to problems of fuel efficiency in individual factories. It was felt that a similar approach would be valuable in securing the reduction of peak hour electricity consumption in non-industrial and commercial consumers.

The Committee considered that there was still a great deal to be done towards educating all those in any way concerned with the use of fuel and power, and recommended that the Ministry's Education Sub-Committees, which were well qualified to advise on the special problem involved, should be given the fullest support.

The Committee received a report from the Non-Industrial and Sub-Committee to the effect that within the next two months the supply of improved appliances was expected to be sufficient for all new houses, and they noted that there was therefore no reason for housing authorities not installing such appliances. They felt that attention should be given to the need for reconsidering the types of heating appliances to be installed in buildings already planned but not yet constructed.

News in Brief

The Central Committee of the Federation of Gas Employers will not meet during August. The next meeting has been fixed for Sept. 14.

Hereford Corporation has accepted a tender of £79,700 for an additional gasholder of welded structure, with a capacity of 1½ mill. cu.ft.

Doncaster Corporation is considering buying 18,300 sq. yds. of land adjoining the gas-works, at an estimated price of £3,745, for works extensions.

The Fuel and Power Committee of the Bexhill-on-Sea Corporation has recommended the acceptance of a tender for extensions to the coke cutting and grading plant at the gas-works.

The Main Contributions to the European solid-fuel requirements during May were from the United States with 883,000 tons (861,000 tons in April); Western Germany, excluding Saar, 1,072,000 (1,321,000) tons; Poland, 1,123,000 (1,238,000) tons; Britain, 841,000 (539,000) tons.

Four Employees of Perth Gas Department received clocks as wedding presents from their colleagues on July 16. There was a combined gift to Miss M. Jolly and Mr. D. Barber, both of the office staff, and other presentations were made to Mr. T. Binny, gas fitter, and Mr. A. McLean, works employee. Mr. W. Nicol Baird, Engineer and Manager, made the presentations.

Representatives of the Province of Buenos Aires Gas Company (a subsidiary of Primitiva Holdings, Ltd.) have received from the Argentine State Gas Department a copy of a decree ordering the expropriation of the Company's assets. Under the decree the Company is offered about £84,000 for the undertaking, including stocks and stores. As this sum is considered to be substantially inferior to the value of the concern, the offer has been rejected. The matter, it is stated, may now be expected to follow the usual procedure under the Argentine Expropriation Law.

During the Four Days July 12 to 15, 76 boys from Messrs. Stewarts & Lloyds, Ltd., Glasgow, visited the Uddingston Gas-works of the Lanarkshire County Council Gas Undertaking. This visit formed one of a series of vacation visits to works, organized by Stewarts & Lloyds for those boys who are released from their work for one day each week to pursue their studies at college. Some of the boys were apprentices in the various trades, including mechanical engineering, electrical engineering, and moulding, while some were from offices and others were operatives in the firm's various tube mills. On each of the four days, activities started with the showing of four films describing the various methods of gas manufacture and illustrating the wealth of by-products obtained from these processes. The film show was followed by a tour of the gas-works in parties under the guidance of members of the works staff.

The Administrative Offices of the British Tar Confederation and of the Coal Tar Research Association are now at 9, Harley Street, W.1. (Telephone Langham 1778.)

Mr. G. Charleston and Mr. J. Monteath have each been presented with a wallet of notes on retiring from Stirling Gas Light Company, after 47 and 46 years' service respectively.

Darlington Corporation has accepted terms submitted by Sadler & Co., Randolph Coke Ovens, Evenwood, Co. Durham, for the supply of coke oven gas to the Darlington Corporation Gas-works.

An Offer by Buckhaven and Leven Gas Commission to supply gas to East Wemyss and Rosie districts during the current lighting season at a cost of 4s. per 1,000 cu.ft. has been accepted by Wemyss District Council.

Middlesbrough Corporation has accepted the tender of W. C. Holmes & Co., Ltd., Huddersfield, for the supply of meter for measuring the gas supplied to the new works at Wilton for Imperial Chemical Industries, Ltd.

High Pressure Gas Lamps are to be Installed by Darlington Corporation in Coniscliffe Road, Darlington, at a cost of £3,957. The Corporation has applied for sanction to borrow £12,986 for gas main extensions at Aycliffe, Brafferton, Middleton-one-Row, and on a housing scheme in Woodlands Road and Carmel Road, Darlington.

The Grey Edition of Communication No. 34/19 of the Gas Research Board (52nd Report of the Joint Research Committee of the Gas Research Board and the University of Leeds: Final Report on a Survey of the Combustion Characteristics of Town Gas) is now available from the Board at 1, Grosvenor Place, London, S.W.1; price 2s. 6d. per copy (post free).

Eighty Members of the Coventry Branch of the Women's Gas Council recently visited the Foleshill Works of the Coventry Gas Department The whole afternoon was spent in inspecting the works and concluded by the visitors taking tea at the invitation of the undertaking. This branch now numbers 137, and is particularly lively in its public relations on behalf of the undertaking.

The National Coal Board has under consideration representations concerning grants which the old owners used to give for religious purposes in a mining area, and the Board has decided that, where early cessation of the grant would seriously prejudice the maintenance of the work, it will be ready to continue it for a time, till the financial arrangements of the religious body have been adjusted. Continuance will be at a diminishing rate and will cease by 1951, except in particular circumstances. Individual cases will now be reviewed by the Divisional Boards, to whom any communication on the subject should be addressed.

GAS AT AGRICULTURAL SHOWS

IN last week's "JOURNAL" (p. 149) we referred to the stand of the York, Harrogate, and District Group of Gas Companies at the Royal Show, York. An exterior view of this exhibit is pictured below.

The exhibit of the York, Harrogate, and District Group of Gas Companies at the Royal Show, York.

The Kent County Agricultural Show was held this year on July 14 and 15 at Maidstone for the second year in succession. Last year the Maidstone Gas Company had a small stand at this show which created so much interest that Mr. A. E. Sylvester, Chairman of the South-Eastern Gas Corporation, decided that this year all the associated Companies of the Corporation in Kent should combine to stage a more ambitious exhibit.

The stand, which was situated on a prominent corner site on the showground, was designed and erected by the staff of the Rochester, Chatham, and Gillingham, and Maidstone Gas Companies. The display staff of the British Gas Council also gave much helpful advice. A happy choice of colour, Cambridge blue with red lettering and uprights and a cream painted background, together with the attractive appearance of modern gas appliances, made the gas stand one of the most striking in the show. The floor of the stand consisted of purifier grids from the gas-works, which were much envied by other standholders, as rain on the first day soon turned the showground into a sea of mud. Both gas and water were laid on to the stand, and the interest in the exhibits was greatly increased by their being alive.

Owing to the difficulty of obtaining at the present time gas fires and farming equipment, the display was largely devoted to the domestic use of gas in rural houses, and an artistic map, prepared by Miss Regan, the Rochester Gas Company's Display Artist, showing the extent of the gas-distributing mains in Kent, together with projected extensions, was prominently displayed.

A special feature of the stand was the laundry section. The manufacturers of Rinso kindly loaned the services of one of their demonstrators, and great interest was shown in the gas washing machine, drying cabinets, and iron used in the demonstrations. (Incidentally, Mr. J. D. C. Woodall, Engineer and Manager of the Maidstone Gas Company, was only too pleased to take this opportunity of having his dirty linen washed in public.)

The loan of a greenhouse was obtained to demonstrate the "Daisy" heater, and inside was a display advertising the use of sulphate of ammonia as a fertilizer.

Not without considerable discussion, it was decided to include gas refrigerators on the stand, chiefly because it was desired to emphasize that gas is modern and up-to-date. As expected, however, the Corporation was inundated with enquiries, and had they been available, could have sold some hundreds of refrigerators from the stand. Messrs. Electrolux loaned a skeleton refrigerator unit. The ball of ice, which formed on this unit, even in the sunshine, was a popular attraction.

A View of the Maidstone Gas Company's Stand.

At the rear of the stand a small marquee was erected in which innumerable cups of tea were made from a cafe set loaned by Messrs. James Stott & Co., Ltd.

The "GAS JOURNAL" snaps a few personalities at the Royal Show, York. Left to right: Alderman H. Bolland, Chairman, Finance Committee, Harrogate Corporation; Mr. N. A. Walker, Area Manager, Harrogate Gas Company; Mr. W. Hodkinson, General Manager, United Kingdom Gas Corporation; Mr. G. A. Potter-Kirby, Chairman, York Gas Company; Vice-Admiral A. L. Snagg, Director, United Kingdom Gas Corporation; Mr. John Harwood, Area Manager, York Gas Company.

SCHOLARSHIPS IN SCIENCE

The Minister of Education has recently published details concerning 20 Royal Scholarships and 11 Studentships in Science for approved courses in science and engineering at the Imperial College of Science and Technology. The awards will be made on the results of an examination to be held at the end of April, 1949. Candidates must be British subjects ordinarily resident in England or Wales, who have not previously studied at the College, or have not been students there for more than a year. There is no age limit. These awards are not open to holders of State Scholarships at universities, State Bursars, or recognized students at training colleges. Full particulars are given on 31a.U.(1949), obtainable from the Secretary, Ministry of Education (Awards Branch), Belgrave Square, London, S.W.1.

Form 31b.U.(1949), obtainable from the same address, gives particulars relating to Whitworth Scholarships, which the Minister of Education, as Trustee of the Foundation of Sir Joseph Whitworth, proposes to offer for competition in 1949.

BRITISH STANDARDS INSTITUTION

The Rt. Hon. Lord McGowan, speaking as President of the British Standards Institution at its annual meeting on July 21, referred to the growing size and influence of the Institution and to the fact that more and more industries are becoming aware not only of the need for standards, but also of the advantages to themselves in co-operating with the Institution in the preparation of standards on a national scale. He pointed out that standardization as a means of measuring the properties or assessing the value of goods is an important element in the proper conduct of industrial and commercial affairs and in the protection of the health and safety of the public. Sir William J. Larke, in presenting the annual report as Vice-President and Acting Chairman of the Institution, outlined the great progress being made in every department. He referred specifically to the great extension in the circulation of British Standards throughout the world, and to the fact that many industries were having British Standards translated into foreign languages.

MECHANICAL HANDLING AT GAS-WORKS AND COKE OVENS*

By W. MORLAND FOX, B.Sc., M.I.Gas E., A.M.I.Mech.E.

THIS paper presents briefly a record of the modern application of mechanical handling to the process of carbonization of coal at gas works and coke oven plants. The subject is treated in the sequence of the carbonizing process, starting with unloading and elevation to the carbonizing plant, outlining methods of charging and discharging of retorts and ovens, and completing the record with the handling, grading and loading of the residual coke. Stocking and reclaiming of coal and coke is also dealt with, as are the minor but important subjects of ash and oxide handling.

The use of machinery in general and of mechanical handling plant in particular in the carbonization of coal has increased most remarkably during the 20th century and out of all comparison with the practice of the latter half of the 19th century. Records show that at the end of that era the production of 1 mill. cu.ft. of gas per day required a labour force of about 20 men, whereas to-day on a comparable scale the number is four or five. This reduction has been achieved largely through the use of mechanical handling plant for coal, coke, ashes, and oxide of iron, accompanied, of course, by the advances in carbonizing plant design and operating technique. The combined annual tonnage of coal and coke which the gas and coke oven industries handle is over 70 mill. tons, to which has to be added the tonnage of ash from producers and boilers, and of oxide of iron used for the removal of sulphur from the gas.

For the cases where the proximity of gas-works to colliery justifies, or the absence of a rail siding necessitates, road delivery, a variety of tipping vehicles is available whose description falls outside the scope of this paper.

Rail wagons are still more than occasionally hand discharged, but there is an increasing use of wagon tippers of which there are several types, the most widely used being rotary, side discharge, and end discharge. Tippers are now designed to take any size of wagon and are capable of handling up to 200 tons per hour.

No hard and fast rule can be made for determination of the economics of installation of mechanical handling plant, but the simplest forms of end, rotary or side discharge machines will unload wagons of coal at 20-25 tons per hour by one man, and can be installed at a capital cost on which amortization, power, and maintenance charges are less than the wages of a man.

All rotary machines discharge into receiving hoppers below ground level, while side tippers have the advantage that the hopper is mainly above ground.

Sea and Canal Borne Delivery

A considerable tonnage of coal is sea borne—the gas companie serving Greater London, for example, consume annually upwards of 5 mill. tons which they transport in their own fleets of colliers. It may be, therefore, fitting to make reference to the plant employed for discharge and subsequent conveyance at the world's largest gas-works —Beckton. In this case, a series of grabbing cranes—each capable of dealing with 250 tons per hour—unload from colliers at the pier head. These cranes may discharge either to a belt conveyor system, to rail trucks, or to barges, according to the immediate destination of the material. The grabs discharge into 10 ton travelling hoppers which feed a system of belt conveyors 48 in. and 54 in. wide, finally elevating the coal to the height of 66 ft. above ground to storage bunker of 6,000 tons capacity. Automatic continuous weighers record the total weight of coal unloaded and handled, and within the storage bunker a travelling tripper on an overhead belt distributes the coal as required. The 48 in wide belts handle 1,000 tons per hour at 500 ft. per minute, the 54 in. belts handle 2,000 tons per hour at 600 ft. per minute, the lengths ranging from 180 ft. to 470 ft. There are six tracks of rails below the bunker, enabling the coal to be loaded into small trucks, to be transferred by the very complete internal railway system serving retort houses.

In many gas-works, electric telpherage renders excellent service in the handling of coal; allowing, as it does, considerable flexibility of operation.

A specially designed telpher installation for grabbing coal from barges and delivery to a store was installed in 1930 for a gas undertaking which was then carbonizing 3,000 tons per annum and showed a financial saving over the former system of unloading by donkey winch, cartage into works and hand stocking.

Every form of carbonizing plant calls for elevation of the coal to a height varying between 20 ft. and 120 ft., depending whether the coal is to be fed via a charging machine to small horizontal retorts or to overhead hoppers serving vertical retorts or coke ovens.

In selecting the most suitable type or combination of types, the plant designer has to take into consideration many factors such as throughput required, space available, capital, operating and maintenance costs, and also whether coke is to be dealt with by the same unit.

The rubber belt conveyor is well known to every engineer. Capacities can range from 20 to 2,000 tons of coal per hour by belts of widths from 12 in. to 60 in. running at speeds from 100 to 600 ft. per minute and having drum centres of from 20 to 2,000 ft. The handling of lump material limits the angle of inclination to 17-18°, smalls will convey up to 20-21°, and slack or finely ground coal will travel at 25°. Belt widths and speed depends on the throughput desired and the maximum size of lump to be handled. Lump material feeds less regularly than sized smalls and speeds should be kept as low as possible, particularly so when handling coke, as wear and tear of belt surface is thus materially reduced. The speed of inclined belts should be kept down on account of extra abrasion at the loading point. Short feeder and shuttle belts should be run as slowly as possible.

The design of loading and transfer chutes deserves great care, and material should be fed on to belts in the direction of travel and as nearly as possible at the belt speed. Impact of large lumps causes cuts in the rubber and damage to the duck, and correct positioning of idlers at feed points plus the provision of cushioned or rubber-covered rollers can do much to reduce belt damage. Discharge by ploughing off rubber belts is possible and may have to be adopted where limited head room prevents the use of a travelling or fixed throw-off carriage, but is not recommended, particularly for coke.

Excessive belt wear can be caused by any or all of the following causes, which can be prevented by good maintenance with beneficial reductions in renewal cost.

(*a*) Wear of skirt board or rubbers allowing trapping of lumps which causes cutting of belt surface.

(*b*) Crooked running of belt and resultant scraping of belt edged on structures.

(*c*) Defective idlers which are worn, or seized, or caked with foreign matter.

(*d*) Material caking on head and tail drums, or spillage on reverse face of belt at tail drum.

(*e*) Excessive tension.

The bucket elevator is still the most common unit for vertical lift. There are two main types—viz., spaced and continuous bucket—and both these can be bucket-on-chain or bucket-on-belt. With all types the important points in design are the feed and discharge. Spaced bucket-on-chain elevators can be " dredge " or " fly " fed, but all continuous bucket types should be " fly " fed. " Fly " feeding is delivery of material to a point at least three buckets above the bottom sprocket wheel. Bucket-on-belt elevators, which are very suitable for coke handling, should also be " fly " fed. The continuous bucket is used to give high capacity and where lump coal is handled. The use of a mechanical feeder, which may be either rotary or reciprocating, is good practice for all types. The design of the discharge depends on the inclination of the elevator, nature of material, speed of chain at the head sprocket, and shape of bucket.

The majority of vertical retort installations and many other plants use a form of pivotted bucket conveyor. This may be either of the gravity bucket or lipped bucket type, both of which are efficient and economical of floor space as they will convey in vertical, horizontal or inclined planes, and by suitable design can handle coal and coke to and from the retort bench. The gravity bucket conveyor must be fed by a rotary filler driven by the chain, whereas this unit can be eliminated with lipped bucket conveyors. Automatic lubricators have been developed which reduce maintenance cost and improve working life very materially.

All forms of bucket elevators and conveyors suffer a gradual reduction in capacity when handling wet smalls, particularly when both coal and coke are being dealt with in the same unit, owing to the gradual clogging up of the bottoms and corners of the buckets.

The skip hoist has many grounds for selection. In this unit the ratio of payload to gross load is high, there are a minimum number of moving parts exposed to wear and tear and requiring lubrication, and renewal of expendable components is easy and cheap. Where small wet coal and coke containing breeze have to be handled by the same unit the clogging up of a multiplicity of small elevator buckets is a problem not met with in any serious degree in the skip hoist, and whereas abrasion and corrosion only take place on the skip and can be dealt with by the use of renewable wearing pieces, every bucket and every piece of elevator chain is under attack.

Hoists may be inclined, vertical or cranked, and can be built with a lift up to 150 ft. and with speeds of from 40 to 300 ft. per minute.

* Presented at the Mechanical Handling Exhibition and Convention, Olympia July 19, 1948.

Speeds above 150 ft. per minute can only be used with straight tracks and require special control gear for acceleration and deceleration at ends of travel. They do not achieve the high capacities obtainable from elevators and conveyors but a duplex unit in which two skips operate in counter-balance will handle 100 to 150 tons per hour of coal.

The scraper or push plate conveyor is still very much used for horizontal conveying over and distribution into bunkers. For handling coal this type of conveyor will give good service and requires the minimum of attention and is probably more fool-proof than any other type in that it gives automatic discharge at several points. This type should always be installed where the alternative is the use of a belt with plough discharge.

Coke Handling

The design of plant for preparation of coke must take into consideration the physical characteristics of the material.

The rubber belt conveyor is unequalled for low wear and tear due to the absence of contact between the coke and metal parts, and the high resistances of rubber to abrasion and corrosion. Initial feed from a hopper to a belt should be by mechanical feeder and while the slow speed belt feeder has merits, it does not deal easily with mixed coke at low throughputs and requires more head room than a reciprocating or rotary feeder, neither of which should be more expensive in maintenance and will be cheaper in first cost.

Chutes between belts or feeding to screens should be designed to slide the coke smoothly, with an easily renewable cast-iron (or equal) wearing plate over that area which receives the coke; the best lining medium for sliding being hard burnt tiles, which, however, disintegrate under continuous impact. The angles of inclination should be suited to the size and condition of coke and the speed of the unit which they feed—*e.g.*, graded coke requires a much smaller angle than wet breeze, and a faster delivery is required to a belt than to a screen.

Many sites have inadequate room for installation of a belt conveyor system to elevate to the desired final height, and for such cases the automatic skip hoist should be chosen. The skip may be fitted with renewable liners on the areas where maximum wear occurs during loading and discharge. Where throughput is less than 15 tons per hour, the capital cost of a hoist will probably be higher than of an elevator; in such cases the bucket-on-belt elevator should be selected.

The changing market for coke has in the past years called for a much greater percentage of small coke than is produced by normal grading, and breaking (or cutting) is widely used. This operation produces breeze almost more than all other handling, and hence the positioning and use of cutters merits more than casual thought.

The ideal method is to cut only the surplus of large coke unsaleable after natural screening; this calls for plant to re-circulate from hopper outlets back to cutter, or the installation of small auxiliary cutting and screening plant. The poorest method is to put all coke as produced through a cutter, varying the cutter setting so as to produce as nearly as possible the percentage required. An arrangement which does not entail high extra capital cost is to install the coke cutter (with a by-pass) between a primary and the secondary or main screen. Only large coke is cut in sufficient quantity to balance the demand. This layout allows the use of smaller cutter and reduces the breeze formation and the wear and tear of the cutter.

Mention should be made of the growing trend towards air conditioning of coke screening plants. This is effected by enclosing all delivery points, cutters, and screens with suitable covers and the provision of a vacuum extraction plant to remove and precipitate the air-borne dust therefrom. The enclosures should be designed for easy removal and replacement. Such plant means additional capital and operating cost, but this is offset in part by the reduction of cost of cleaning and maintenance and by the intangible effect of improvement of working conditions.

Grading of coke can be done in descending or ascending order of size or by a combination of both. There are three main types of screens employed to-day, vibratory, reciprocating, and grizzley, the rotary screen being practically obsolescent.

The vibratory screen gives a high throughput in relation to area but for production of the four or five grades normally sold by the gas industry the installation of this type of screen usually necessitates the use of belt conveyor between screens to give satisfactory layout over bunkers.

The reciprocating screen acts as a conveyor and allows a very simple plant arrangement which is generally cheaper in capital cost as well as in power and maintenance cost.

The grizzley screen is more suited to high throughputs and primary screening. The accuracy of grading deteriorates with wear and this type of screen is not generally used for sizing below 2 in. It is used extensively by the coke oven industry whose main product is large coke.

The financial loss caused by the production of excess breeze cannot be too strongly emphasized and anti-breakage devices should always be installed for lowering coke above ¾ in. to 1 in. size into bunker compartments. The type of device most generally employed is the cast-iron spiral chute which may be surfaced with renewable facings of hard burnt brick or cast-iron tiles.

Breeze formation must occur to a certain extent after screening and before loading, and modern coke plants are fitted with debreezing equipment at hopper outlets to load coke free from smalls and dust either in bulk or bag. Static screens are generally low in efficiency, and specially designed high capacity vibratory screens are preferred. Depending on the size of plant and rate of demand these may be fixed self-contained units at each loading chute or one or more travelling units serving several outlet points.

Reference has been made earlier in this paper to the adaptability of electric telpherage, and this system of handling lends itself better than any other to gas-works' use for stocking and reclaiming of both coal and coke as well as general handling.

A level rectangular site can be effectively covered by a travelling bridge on which are mounted a conveyor and one or more grabbing cranes. Belt conveyors running on one or both sides of the transporter track deliver material via travelling trippers either to the conveyor in the bridge or to the edges of the stocking ground from which the cranes grab and dump to the centre. These cranes reclaim and dump into the belt conveyor in the bridge, which delivers to a conveyor running parallel to and outside the track.

Alternatively, a single conveyor mounted on an elevated gantry and equipped with a travelling throw-off carriage will build a stock heap of truncated conical section; the use of a cross conveyor (either fixed, reversible or shuttle) or "wing" conveyors will increase the area and volume. Reclaiming of such a stock pile may be by belt conveyor in a tunnel, or by grabbing cranes (trackless or rail) feeding into the stocking conveyor (which may have to be reversible), or to road and rail vehicles.

For an irregular site the drag scraper system is extremely suitable and is economical in capital and operating cost.

DISCUSSION

Mr. F. M. Birks (Deputy Governor, Gas Light and Coke Company), who presided over a large attendance, said the great Gompany he had the honour to serve was probably the first gas undertaking in the world to lay out a very large works designed with a view to the efficient handling of materials; he referred, of course, to the works at Beckton. Ever since those early days the Gas Light and Coke Company had been in the forefront and had always had the tradition of pioneering every possible advancement in mechanical handling. He commended the author's remarks on the subject of designing plant so as to reduce the production of breeze to a minimum. He noticed that he had not particularly stressed any reason why the practice very commonly employed on the Continent of Europe and in America of using a large bridge for the stocking and reclaiming of coal was not usual in the gas industry in this country, and he felt that was a matter worthy of very careful consideration. Probably the reason was that there was a certain amount of fear of spantaneous combustion of the coal, for in this country it was not usual to stock coal to a greater height than 12 ft., whereas in America the height was very much greater.

The whole subject of mechanical handling was of very great importance. Advances in the technique of carbonization in the last 50 years had been made possible only, or mainly, by the great advances that had been made in the same period in the art of mechanical handling.

Mr. J. D. C. Woodall (Maidstone) said he thought Mr. Morland Fox was to be congratulated on the remarkably interesting way in which he had dealt with a wide subject. He (Mr. Woodall) had come to speak on behalf of the many engineers and managers who were in charge of small and medium sized gas-works. The author had dealt in his paper very largely with mechanical handling plant of a type which could be found only in the larger works. It was true to say, however, that in the retort house in even the smaller works the mechanical handling plant could, and should, be as good as that which was found in the larger works. The retort house plant which he had described in his paper to the Southern Association was, in fact, almost identical with that found in many very large works. There was also no reason why their coke plant should not be as good as that found in the larger works, though he feared that was seldom the case.

Problems in the Yard

The engineer in charge of the smaller works was faced with great problems, not so much in the retort house or in connexion with coke handling, as in the yard. Personally, he would like to install a drag line scraper for stocking and reclaiming coal. He would like to install rubber belt conveyors for conveying coke to the water gas plant, but that sort of thing was impracticable in the smaller works. Their problems had been accentuated during the last few years, not only because of the high cost of the labour which they could obtain but because they could not rely on getting the right type of men from the Labour Exchange to help them when they had a large amount of coal to stack or they had to empty their purifiers.

As an example of what was done on a medium sized works he described what had been done at Maidstone for emptying the purifiers. About three years ago they purchased a diesel electric crane on caterpillar track, largely for use as stand-by to the crane they were then using, a very old steam crane which was used for unloading coal from barges. Since they purchased the diesel electric crane they had found they had been able to use it for a vast number of jobs about the yard, many of them jobs which on larger works would require their

own special plant. It was used for stacking and reclaiming coal and coke, for dealing with the breeze from the le fleuve conveyor, for emptying the purifiers, and for handling the oxide. The great advantage was that all this was done with one piece of plant, used in conjunction with the ubiquitous dumper. With the use of the crane, the emptying of the purifiers which formerly took six days was now done in two (against the four days mentioned in his paper earlier in the year), and instead of 22 men they had eight men working on the boxes.

Mr. **Morland Fox** said it was appreciated that most of the matters dealt with in his paper referred to the larger works, but he welcomed Mr. Woodall's remarks on the problems of the smaller works, and especially his reference to oxide handling. Purification was one of the most controversial subjects in the gas industry, but he thought the solution of the problem lay in selecting the type of plant most suitable for the particular problems under consideration.

Mr. **W. S. Hubbard** (Liverpool Gas Company) remarked that the author in the first instance had indicated the magnitude of the gas industry's coal and coke handling problem. This he (the speaker) considered to be a 1939 perspective, as in those days the problems could have been considered over a seven-day period, whereas it was now one of 5½ days and likely to be five before long. At a time when materials and skilled labour were at a premium this was a serious change, resulting in increased capital costs due to much higher rated and larger capacity plants and stand-by plant to avoid overtime and week-end working of maintenance staffs. All this tended to do the exact opposite to what was required these days, in order to produce the highest machine load factor possible and the highest output per unit of capital spent.

Continuing, Mr. Hubbard said he was glad to see that the author had avoided stating as so frequently happened in papers of this type, figures which indicated a cost per ton; what really concerned management was how much cheaper it could be done than at present. The gas industry load was generally of a steady nature year by year, and not a victim of serious trade fluctuation; thus the handling problems could be reasonably assessed or anticipated, so that when a handling scheme was introduced the money spent should show a reduction in labour. He would suggest that the reduction in costs should be shown against the whole of the works personnel, and not necessarily against the manpower which was doing the particular work previously. There seemed little point in reducing the operating manpower only to find an increase in the maintenance or administrative staffs.

The author quoted comparative manpower figures for gas-works, compared with the last century, to show the improvement as a result of improved handling. Mr. Hubbard felt that the author's figures were somewhat misleading since they obviously referred to the men actually making the gas. In his (the speaker's) view, the whole of a gas-works task was one of handling, and all jobs were closely interrelated. It should be noted that the manpower other than that engaged on manufacture might be anything between 2½ to four times as many, depending on circumstance. During the past four years, the Liverpool Gas Company had spent large sums of money in order to reduce manpower. Great care had been taken to see that the expenditure had justified itself, but in their view the skill which was required in re-arranging the operating personnel after the scheme had been installed was far greater than that required in producing the mechanical scheme. They were prepared to spend £4,000 on labour to reduce the manpower. Naturally they had certain datum lines; they were prepared even to go above this figure as wages, and conditions were continually in the ascendant in this respect. It was also considered that a modern works with continuous vertical retorts should have a manpower of the order of 12 per mill. cu.ft., assuming no chemical process was tied up to gas manufacture and transport labour was excluded.

There was, in his view, unlimited scope in their industry for improvements in handling, and he would like to make a few suggestions:

(1) A reduction in the number of conveyor belt widths.
(2) Standard designs for troughing idlers.
(3) The exclusive use of squirrel cage motors to work in conjunction with fluid couplings.
(4) Standardization of conveyor buckets and chains and the adoption of a minimum range.
(5) Investigation into the uses of alternative materials with improved abrasive and corrosion resisting properties.

The Liverpool Company, added Mr. Hubbard, had in hand experiments with alluminium allow conveyor buckets and it was thought that not only would there be a reduction in power requirements, but wear and tear would be less and noise and shock reduced when tipping.

(6) With regard to coke screening machinery, he continued, there were certain factors which also needed to be stressed in view of current circumstances. Really skilled maintenance men were becoming rarer and rarer, and therefore machinery should be robust and heavy in design, capable of running for long periods with the minimum of attention. Because of the dust condition, the design should be such that units could be withdrawn and replaced in sites quickly and the repairs carried out ex plant.

New schemes for plant were now receiving attention from local planning authorities and the elimination of noice and dust demanded serious attention. Finally, he would like to draw attention to the fact that the Gas Research Board had in hand work on the screening and breaking of coke which it was hoped would produce valuable data for designers of plant in order to reduce attention.

Money Value of Labour Saving

Mr. **Morland Fox**, replying to Mr. Hubbard, said opinions differed as to the amount of money which should be spent in saving the labour of one man. Mr. Woodall had touched on the problem in his paper to the Southern Association, and in the lengthy discussion which arose out of that paper he believed the highest figure quoted was £3,750. Mr. Hubbard had put forward some useful suggestions, and he could assure him that the Mechanical Handling Engineers' Association had the question of the standardization of conveyors under consideration. They did not intend to lay down hard and fast standards but they wanted to recommend and put forward certain basic standards which could be accepted and which would give flexibility in choice and performance. It would be appreciated that work of that kind took a long time and required a good deal of correlation.

Reference had also been made by Mr. Hubbard to the use of squirrel cage motors, and other things. In many respects he supported his suggestions, but they were not to be taken as a panacea for all the ills on the works. Good primary design would produce a driving and conveying unit without the necessity for fluid drive or other refinements. On the question of alternative materials, a good deal of work had gone into enamelling and other processes for the protection of conveyor faces, and work on that subject would have gone further but for the present shortages. Their immediate aim was to get plant out, and they had little time or scope for research. On the question of coke cutting, the National Federation of Gas Coke Associations had produced an initial report, and he thought it would be found that noise and dust could be reduced if not eliminated by a proper system.

Mr. **F. C. Doherty** said he was interested in the discharge of coke, and he asked whether the spiral conveyor was much used for the prevention of coke breakage.

Mr. **Morland Fox** said the cast-iron spiral conveyor was largely used in the gas industry and in the coke oven industry, but more particularly in the gas industry because in the coke oven industry the coke was more often screened direct into rail wagons.

Mr. **L. J. Smith** observed that nothing had been said about the automatic conveyor weighbridge used generally on the larger type of installation. He was interested in the automatic type of weighbridge because he was responsible for looking after certain of the Beckton coal handling plant and the ship loader for coke referred to by Mr. Morland Fox in his paper. It seemed to him that the type of weighbridge at present in use left much to be desired in respect of accuracy.

Mr. **Morland Fox** readily admitted that the weighbridge question was a poser until they could attain an accuracy within ½%. The weighbridge was a very sensitive instrument working under all kinds of variations, and the type of weighbridge usually found at the entrance to the works had an accuracy of anything up to 99.999%.

Mr. **R. A. Chantler** (Liverpool) said in his opinion the outstanding development in mechanical handling as they knew it to-day had been in the charging machine used in the retort house. The De Brouwer system of charging horizontal retorts was one of which the author had had considerable experience. The De Brouwer projector aimed at levelling the charge in the retort, but he would like to know whether the manufacturers of that type of equipment had attempted any scientific investigation into the use of some type of automatic speed control.

Mr. **Morland Fox** said that many years ago his Company spent large sums of money on investigating such improvements as had been suggested. They could secure correct charges by adjustments to the charging machine, but they had not produced fully automatic control. All sorts of improvements and refinements had been suggested, but there was nothing to take the place of the really skilled operator.

The Coke Oven Side

Dr. **G. E. Foxwell** said he would like to congratulate Mr. Morland Fox and the makers of mechanical handling plant on the enormous improvements which had been made in the last 30 years or so. So far no one had spoken for the coke oven industry, and he therefore ventured to rise as one who had been a coke oven manager 30 years ago. Mr. Morland Fox had said that the great thing to do was to handle the coke carefully so as not to break it. If they were handling glasses or bottles the idea would be to pass them on to the customer and let him or her break them, but now they had been told that if there was a fracture in the coke it should be taken out in the gas-works or coke ovens, and not on the consumers' premises, where the consumer might get breeze which he did not want. That might, or might not, apply to the gas industry, which sold coke to the domestic consumer who did not want breeze to throw on to his garden. In the case of the blast furnace the position was different; and on the basis of calorific value the breeze could be just as valuable as the coke provided it was burnt in the right way.

On the proposition of the **Chairman** a hearty vote of thanks was accorded to Mr. Morland Fox, and on the proposition of Mr. T. C. **Battersby** (Watford and St. Albans Gas Company) a vote of thanks was accorded to Mr. Birks for presiding.

AESTHETICS IN THE GAS-WORKS

(From Our Special Correspondent)

THE 65th Congress of the Sté. Technique de l'Industrie du Gaz en France, the equivalent of our Institution of Gas Engineers, was conducted with the same success and with the same high quality of communications as in previous years. The *Journal des Usines à Gaz* for next month is to be devoted to a full and detailed account of the Congress—it is to be an "Institution Number." In the meantime two features of the proceedings are underlined; first, the number of papers dealing with problems of distribution, indicating that French engineers appear to be on the eve of a general revision of the methods hitherto used in the calculation of the flow of gas in pipes and the proportioning of distribution systems; and second, the important contribution to the proceedings by technicians of the coal industry, a collaboration which no doubt will become more intimate and at the same time more fruitful.

"The Aesthetics of Industrial Structures," by M. Maurice Veillon, is the principle article in this month's *Journal*. It is a full treatment of a subject which is thought by some to be of minor importance in view of the more or less temporary nature of these structures—a point of view with which M. Veillon does not agree. But he recognizes that it is necessary to define the term, its "horizons," its limits, and its purpose. There is, he says, first an aesthetic of technique, that of the engineer, which consists in regularity, homogeneity, good order. To this must be added, in no sense of opposition, the larger interpretation, that of the artist which takes care of the general aspect of the assembly of structures, the aspect of the "City."

It must be admitted that the richness and the variety of modern materials, the progress made in their fabrication, have not always been followed by happy results in their utilization, but too often by a certain ugliness and by some unfortunate combinations. On the other hand there are some excellent results of the use of modern materials, and these are increasing year by year.

The problem is not, however, solely architectural and artistic; it concerns the moral and social order. There is, for instance, the moral effect on the personnel called upon to work in the factories. The subject of aesthetics in industrial structures is in fact the inverse of the problem of the slums. The moral effect on the workpeople of the surroundings in which they work is similar to that of those in which they live, with a very definite and serious effect on the quality and efficiency of their work.

In the first place one must get rid of the idea that only the ancient styles of architecture are aesthetic. There has always been a modern style. We should not make the factory an imitation abbey, a railway station an imitation Greco-roman temple. We must find something else. The modern building is generally steel or reinforced-concrete framed, or totally steel or reinforced concrete, very rarely ordinary masonry. Several methods of constructions have been used:

(1) The framework is completely covered in more or less massive masonry. There is often a relapse into ancient architecture, particularly in public buildings. The tying-in of the masonry cover to the steel frame is often a little weak and the want of logic in this somewhat artificial architecture is evident. It is rare in industrial buildings.
(2) The framework is left in evidence as an important element of the architectural decoration. This has been called panelled architecture. Contrasts in colourtone can be used with effect. The style is suited to offices, workshops, stores, retort houses.
(3) Monolithic (or apparently monolithic) structures in reinforced concrete, a method with more possibilities and more difficulties. Some results are good, others not at all good. The pitfalls are excessive lightness, abuse of cantilevers, "lean-to's," false work, the polyhedric form, or, on the contrary a too servile following of tradition leading to construction in ferro-concrete as if it were stone.
(4) Copies of classic styles—always to be avoided in industrial structures.
(5) Regional styles. These should be developed very much, particularly in the direction of adaptation to climate.
(6) It must not be forgotten that the character of the neighbouring buildings sometimes imposes a certain conformity which however should be followed with prudence.

Need for Originality

M. Veillon insists on the possibilities of originality in the treatment of industrial structures. It is a commonplace observation that certain ancient and modern bridges present a real beauty in the middle of characterless wastes. This all results from the necessities of construction, with simplicity of line and surface, absence of useless ornament, but artistic taste. It is natural to recall once again that the Gothic style, at least in its original purity, was an engineering as much as an architectural style. It is pure geometry. The ogive, the transept, the flying buttress arose from the necessity of construction. It is in this direction that we moderns must work, associating pure logic with good taste, science in calculation with culture in art. If it presents more difficulties it offers greater possibilities. New problems require novel solutions. Modern materials offer new possibilities. That is what makes them interesting.

How, then, must we put these theories into practice? One point must be firmly stated. In the industrial structure we must not seek to create a monument. Industrial architecture must remain modest in character. The preliminary considerations are:

(1) After the calculations and the technical necessities one must consider the distribution of the masses, the volumes, the surfaces, the openings, and the general proportions—seek equilibrium. It is a question of good sense, practicability, and taste.
(2) The building should give the expression of a solid base, well anchored to the soil. There should be few openings at the base—a difficulty, for instance, in certain hydraulic plants where large volumes of water must be evacuated at the base—but otherwise there is a deplorable impression of fragility.
(3) Harmony and logic in height but a careful distribution of openings and salients.
(4) If the structure has great length, it should be sub-divided with masses placed backward and forward, otherwise the impression is barrack-like.
(5) If the structure is tall, it can be treated as a tower; that is to say the floors are not emphasized but, on the contrary, the impression of height is accentuated somewhat in the Gothic style with vertical lines and surfaces predominating—that is, the architecture of the "sky-scraper."
(6) There should be no standard design. The spirit of the subject, the object of the structure, should not only not be hidden but should be emphasized. One should "exploit the idea." The abuse of one type of construction, successful in one case but not in another, is to be deprecated. The panelled construction, for example, is very acceptable for workshops, weaving sheds, series of buildings, but not for an isolated block. This observation applies also to details. Decorations should not be repeated in series or borrowed from quite another type of construction.
(7) As far as possible, conform to the character of the locality. Vitruve has written. "One does not build as in Babylon everywhere in brick." The regional style is the product of the local conditions: climate, light, nature of the soil, materials available, mode of living. But one must not imitate too closely. One must choose among the characteristic elements of the local style those which can be reasonably adapted to the industrial structure, firmly avoiding anything which has purely historic interest.
(8) The risk of conformity to local style is easy to imagine. Romanticism must always be avoided. An industrial structure is a severe subject. No attempt should be be made to conceal this by more or less unnatural means. Make no attempt at the pretty or picturesque, leading to the rustic suburban, to the castellated swimming pool, &c.
(9) Finally, an observation difficult to express, one must seek homogeneity in the assemblage of structures, using the same style as far as possible in all.

Good Principles Applied to Gas-Works

It may be objected that these principles are easy of application in single structures, such as bridges, workshops, electric power stations, but that industrial plant is often extremely varied, complete with unforeseeable developments which defy architectural treatment. There are, for instance, the widely varying buildings and structures of the chemical works and particularly the gas-works. These seem to lie outside the subject of the foregoing observations. M. Veillon, however, puts forward the following complementary observations:

(1) Only comparable objects should be compared. A retaining wall, a chimney, an electric pylon, may be well or badly treated. Once the dimensions are determined by calculation, one must know how to emphasize some lines and reduce the impression of others—all with rigorous sobriety. A brick chimney overloaded with mouldings and denticulations can be deplorable. There are water-towers well-treated, others which are ridiculous, recalling a ninepin, a cup and ball, a tank on four legs.

Some electric power stations and some gas-works are very successfully treated. Others are ugly, masses of buildings of all sorts, disordered and out of proportion.

(2) There must be a good sense of detail, care bestowed on finish—all those innumerable accessories forming part of the installation whose purpose is mostly purely industrial. Pipe work can be well arranged—in conformity with the parallelism of the buildings, taken vertically against pillars and so on. The arrangement and finish of gateways, doorways, and windows can make

a great difference; the disposition of gutters in metallic structures; paving and boundary walls; the number is endless.

(3) The composition of the general plan. Here the scale model is important. In this connexion we have the extreme case of the gasholder. The trend is everywhere to conceal it, either in a depression of the site, or behind a screen of trees, or to camouflage it by appropriate paintings—green if the neighbourhood is cultivated or wooded. There are even designs in a mosaic of colours adapted to that of the countryside.

(4) In the choice of type of construction it is easy and interesting to respect the local character. One knows an agreeable region where all is brown and ruddy—earth, roads, buildings, rocks. It would be deplorable to put up here buildings of white concrete. The aim should be never to draw attention to your new structures. Never play out of tune!

(5) One can make use of publicity more cleverly than is generally done. It is possible to work monograms, symbols, and lettering into main lines of many structures, but this should never be pushed too far.

(6) Internal decoration. In workshops the influence of colour on the working efficiency of personnel is well known. Machines in movement, piping carrying different substances, perhaps dangerous elements, can all be picked out in appropriate colours. In offices, canteens, and meeting rooms, pleasing effects can be obtained with stencils or tiles.

(7) Plantations of trees, shrubs, and lawns, are the complement of all constructions and their inclusion in industrial plants is justifiable, but here, as everywhere in industrial structures, simplicity must be the rule. A works must not resemble a park and taste must rule. You may decorate a suburban station with climbing roses but a bed of tulips will not embellish a gasholder. Hedges and screens of trees or shrubs may be used to conceal the unsightly.

The Industrial Landscape

There is the idea of an industrial landscape, generally conceived as an assemblage of ugly things, but not necessarily unaesthetic. Some comparisons will show that here is no real inconsistency. A collection of shanties individually sordid may compose an ensemble to tempt the painter. We all know tableaux of ruins poetic in their appeal which seen in isolation are mere demolitions. Bell-turrets, towers, may constitute picturesque assemblies, but an isolated tower resembles a chimney. One buildings seen alone is often mediocre, but the mass of sky-scrapers at Manhattan does not lack the character which tempts the artist to paint. So an assembly of industrial structures may have a distinctive character, a particular aesthetic—several of course—made up of lines and surfaces, both very simple, but which stand out in an atmosphere, in a particular light, the whole constituting a subject which the painter has sometimes found worthy of his art.

In conclusion, M. Veillon notes a sort of directive which can be summed up as a tendency towards simple forms, adapted to the purpose and as far as possible to the character of the region in which the structures are to be built. Structures built in the style of the countryside with its particular materials and treated very modestly, structures simple in form and good in taste, composition and siting, all that is a question for the designer's board and of art much more than a question of expense. These notes are put forward as an "Introduction to a Treatise on Industrial Architecture."

P. Rival, of the Appareils Electriques et Compteurs Garnier, describes apparatus for the control of pressure in industrial furnaces requiring a supply of gas at a determined and constant pressure.

There is news of the unveiling of a new statue of Phillippe Lebon at Chaumont, in stone, replacing the original bronze of 1887 which was melted down by the Germans in 1942. Lebon, born in 1767, distilled wood at Brachay to make gas for lighting purposes. A consultative committee has been set up, to advise the Minister of Industry and Commerce on the utilization of energy; gas is represented by M. Leclers, Directeur de l'Exploitation de Gaz de France. The gas-works at Vibraye, one of the smallest in France, supplying 30,000 cu.m. (about 1 mill. cu.ft.) of gas to less than 200 consumers, was re-started on May 30 before a distinguished company of national officials. Vibraye lies in the Department of Sarthe, of which Le Mans is the principal city. M. J. Perret reports on the B.I.F. at Castle Bromwich, where he found the gas exhibits extremely instructive and interesting. Stocks of coal at the gas-works are a little more than they were in the preceding month following the resumption of American shippings after the strike. Stocks of coke are increasing and disposal is becoming more difficult, but full liberty of sale has not yet been granted though rations have been increased.

WATFORD'S WELFARE SCHEMES

THE report of the Co-Partnership Committee of the Watford and St. Albans Gas Company—covering the progress of the co-partnership, pension fund (1928), group life and pension scheme, and the life insurance scheme in the year ended Mar. 31—records that there were 121 new entrants to the co-partnership and group life and pension schemes on Jan. 1, 1948, while 11 employees were admitted to the co-partnership scheme only. The Directors have now raised the age limit for new entrants to the pension scheme as from Jan. 1, from 45 to 50 years at the date of entry into the scheme.

The changes in membership of the various welfare schemes during the 12 months from April 1, 1947, were as follows:

	Membership at Mar. 31, 1947	Membership at Mar. 31, 1948
Co-partnership scheme	658	737
Pension fund (1928)	274	252
Group life and pension scheme ..	342	437
Life assurance scheme	74	70

Allocations and transfers of stock to co-partners during the year amounted to £2,980. Co-partners' voluntary deposits to the scheme during the period totalled £4,867. A bonus of £4% per annum on basic wages and salaries was declared for the year. Interest was paid by the Company on all amounts standing to the credit of members' accounts at the rate of £4% per annum.

The report states that co-partners have been advised from time to time of the steps taken to safeguard their interests under nationalization, particularly with regard to co-partnership which originally in the Gas Bill was to cease as soon as the State took over the gas industry. An amendment to the Gas Bill was, however, agreed during the Committee stage in the House of Commons whereby co-partnership has been reprieved for a period after vesting date so that discussions can take place by the new Area Boards in an endeavour to introduce some alternative scheme.

The accumulated pension fund (1928) now exceeds £244,800. Of the 107 pensioners at Mar. 31, 1948, 16 received their pension wholly from the Company. The rules of the fund were amended as from April 1, 1947, and members were given the option of consolidating part of the cost of living bonuses with basic salaries for pension purposes. Over 99% of the members notified their acceptance of the option to consolidate.

During the year £4,790 was invested in Savings Certificates and stamps, making a total of £43,103 saved since the inception of the Group in June, 1940.

Amounts collected during the year for hospital schemes and charities were as follows:

Watford Peace Memorial and Bushey Hospitals, £149; St. Albans and Mid Herts Hospital and Nursing Association, £122; West Herts Hospital, £55; Hospital Saving Association, £21; Watford District Nursing Association, £5; Red Cross and St. John Ambulance Society £41; St. Dunstan's, £26; Royal Institute for Training the Blind, £1.

A pictorial presentation of the welfare accounts and reports issued with the formal statements brings out the following statistics:

The Company has 72,492 consumers, 2,314 stockholders, and 737 co-partners. The amount standing to the credit of co-partners is (in round figures) £25,500; stock owned by co-partners amounts to £36,300, and stock allocated to co-partners during the year was £2,980. Bonus and interest paid was £9,700; sums paid in by co-partners as savings during the year amounted to £4,900; and the total bonus and interest paid to co-partners since the beginning of the scheme is £132,200.

There are 107 pensioners, and 689 co-partners are associated with the Company's pension funds. The Company has contributed £18,700 during the year and members have contributed £7,100. Employees are covered for life assurance in the sum of £120,600. Pensions paid during the year amounted to £9,500. The total paid by the Company to pension funds since 1930 is £182,500.

BRITISH INDUSTRIES FAIR, 1949

Plans for the 1949 British Industries Fair are well advanced; they began before the 1948 event closed its doors. Already application forms for space have been despatched to previous exhibitors and other interested firms. These are returnable by Aug. 7 and enquiries already to hand indicate that the demand will be exceptionally heavy. Last year more than 600 late applicants could not be accommodated. As already announced, the B.I.F. will be held in London and Birmingham from May 2 to 13, 1949.

In 1949, as at previous Fairs, certain trade associations are co-operating with the Export Promotion Department in the arranging of uniform schemes of presentation. Participation in these special arrangements is not confined to association members and exhibitors may wish to take advantage of this and so secure full benefit from the co-ordinated displays.

Interested manufacturers who have not received an application form should apply immediately to either the Export Promotion Department (Exhibition Branch), 27, Old Queen Street, London, S.W.1, or to the Birmingham Chamber of Commerce, 95, New Street, Birmingham.

PROPOSED NEW GAS-WORKS FOR WORCESTER

OPPOSITION AT PUBLIC ENQUIRY

AN application by the Worcester New Gas Light Company for a Special Order under the Gas Undertakings Acts, 1920 to 1934, to provide for the acquisition of the Droitwich Corporation Gas Undertaking, the erection of a new gas-works in the City of Worcester, and the temporary use of additional land adjoining the existing gas-works was the subject of a public enquiry opened by Mr. G. W. Tookey, on behalf of the Ministry of Fuel and Power, at the Worcester Guildhall on July 23.

Mr. Harold Willis and Mr. Hugh Forbes, instructed by Messrs. Dyson, Bell & Company, Parliamentary Agents, appeared for the Gas Company. Mr. E. J. C. Neep, K.C., and Mr. H. Royston Askew appeared for the Worcester Corporation, the principal objectors; Mr. S. R. Legge, Secretary of the Worcester Trades Council, objected on behalf of the Trades Council; Mr. W. J. Daniels represented objectors in the area surrounding the site of the proposed new gas-works; Mr. W. C. Anderson appeared for the National Association of Local Government Officers; and Mr. J. D. Schooling, Assistant Solicitor of the Worcestershire County Council, watched the interests of the County Council.

Mr. **Willis** said that the matter in respect of which Mr. Anderson was appearing on behalf of Nalgo was quite distinct from that which arose in the case of the other parties. It concerned only the question as to whether any special protection could be given to the employees of the Droitwich Corporation Gas Department which was to be transferred under the Order to the Worcester New Gas Light Company. The parties had not had very much opportunity of considering what special arrangements could be made, and he suggested that consideration of that particular objection could be deferred for the time being to give the parties a further opportunity of discussion. He was hopeful that this isolated matter could be satisfactorily settled as the result of conversations which he suggested might take place in London within a few days.

Mr. **Anderson** agreed with Mr. Willis that this would probably be the best way of dealing with the matter.

Mr. **Willis**, opening the case for the applicants, said there were a number of quite distinct matters which were covered by the proposed Special Order. In the first place it sought statutory confirmation of an agreement made by the Gas Company with the Droitwich Corporation under which the gas undertaking of the Corporation was to be transferred to the Gas Company. To this part of the Order there was no opposition. Secondly, the Company was seeking an extension of its statutory limits of supply so as to include the Borough of Droitwich, and to add the rural area round the Borough of Droitwich in which at the present time there was no gas supply. Thirdly, the Company was seeking the scheduling for gas-works purposes of two additional areas of land; one a very small part of the existing site which at the present time was not scheduled. There were two reasons for this particular proposal; one was that the existing works had spread slightly beyond the area already scheduled and the Company wanted to regularize the position; and the other was that the Company envisaged a scheme for transferring the works to a new site and in the transitional period it might be necessary to make minor alterations to the existing works, necessitating the use of this extra piece of land.

Mr. **Neep** intimated to the Inspector that he would not be putting any case against this part of the application.

Major Point in Dispute

Mr. **Willis** said the major point of dispute in the application was the proposed scheduling for gas-works purposes a new site adjacent to the railway and not very far from the present site. Finally there were provisions which were to a large extent consequential on the scheme for using the new site, and some provisions for additional capital powers. He thought he could say with accuracy that the real opposition to the application was in relation to the new site which the Company had selected for its works. In regard to the proposal for the extension of limits of supply certain objections had been raised by authorities such as the railways and highway authorities, but suitable protective clauses had been agreed upon and opposition had been withdrawn.

Dealing with the main application, Mr. Willis said the Worcester New Gas Light Company was incorporated as a statutory company in 1846 for the purpose of taking over an existing gas undertaking which had been incorporated in 1818. The limits of supply which were then fixed had remained unaltered up to now, and comprised the City of Worcester and its suburbs; in effect the City boundary was the boundary of the Company's area of supply. Small additional capital powers were obtained in 1848, and in 1929 an Order was made under the Gas Undertakings Act, 1920, empowering the Company to adopt the thermal basis of charge.

The Company was a maximum price Company, which meant briefly that dividends as well as prices were subject to a maximum. Under the Order to which he had referred the maximum price for gas was fixed at 9.6d. per therm, but as the result of Orders made in recent years by the Ministry of Fuel and Power to enable gas undertakings to meet increased costs of coal, this Company in common with practically every other gas undertaking had had to increase its charges, the maximum price at present being 14d. per therm. Comparison of that figure with the 15d. charged by the Gas Light and Coke Company was an indication that the Worcester Company was one which carried out its business in an efficient and economical manner.

Rapid Growth of Output

The annual output of gas in 1900 was 240 mill. cu.ft., and last year it was 900 mill. The increase between 1934 and 1947 had been very great, the 1934 figure being 400 mill. There had been corresponding increases in the maximum demand in the 24-hour period. In the case of a gas undertaking the annual figure, although of interest, and relevant, was not the whole story, because a gas undertaking had to be able to meet its demand at the peak periods. In a hard winter a peak demand might go on for weeks, and it was to meet that peak demand that an undertaking must have sufficient manufacturing and storage plant. Evidence would be given to show that while there were limits to storage accommodation something in the nature of 20 hours' supply was commonly accepted as a suitable provision, though that would not afford a reserve adequate to meet a prolonged peak demand without sufficient manufacturing plant being available.

Under the Worcester New Gas Light Act, 1846, the Company was authorized to take over the works of the old Company and the land on which the works was erected, and to purchase five acres of land in addition. As a result the existing area of approximately seven acres had been developed for gas-works purposes. The existing site, now fully developed, was totally enclosed by the railway, Railway Walk, Tolladine Road, the canal, and Rainbow Hill Road, and there was no room for any further extensions. Moreover a large proportion of the plant was approaching the end of its useful life.

The capacity of the present works—the yield on which the Managing Director and Chief Engineer could reasonably rely—was 4 mill. cu.ft. per day. It was possible to produce 5 mill. cu.ft. for short periods, but there were circumstances which precluded the maintenance of that rate of output for more than limited periods. So far as storage was concerned, the gasholders on the existing site represented a total capacity of 1,700,000 cu.ft., the same as at the beginning of the present century. In 1918 that figure represented the equivalent of 27 hours at the maximum daily output. In 1928, with the increase in output, it had fallen to 24 hours; in 1938 it was down to 12 hours, and at present it was equal to only six hours of maximum output, compared with a generally accepted standard of 20 hours.

The ancillary plant required alteration, improvement, and extension, but the present site precluded extensions of the order required and the Company had taken the view that it would be bad policy to spend money on trying to improve the existing works.

Limits of Supply

Turning to the limits of supply, Mr. Willis referred to the bulk supply now being afforded to Droitwich. In 1945 or 1946 the Droitwich undertaking, which was quite a small one, got into serious difficulty and it was suggested by the Ministry of Fuel and Power that it should be taken over by the Worcester Company. That, of course, involved statutory powers and pending the granting of those powers, which were sought in the Special Order, arrangements were made under Defence Regulations under which a bulk supply had been given to the Droitwich Corporation. As a corollary to the taking over of the Droitwich undertaking it was proposed to extend the Company's limits of supply to cover the Droitwich area. Provision was also included in the proposed Order for the inclusion of a rural area in the rural districts of Droitwich, Kidderminster, Martley, Pershore, and Upton-on-Severn. It was not suggested that it would be practicable to supply the whole of the additional area with gas in the very near future. There were very great difficulties, particularly at the present time, in extending gas supplies into rural areas, but it was desirable that the Company should be empowered to carry out such extensions of supply when they became practicable. The bulk main from Worcester to Droitwich passed through intervening areas and some supplies might be taken off that main for the intervening villages. The present agreement with the Droitwich Corporation provided for a supply of 65 mill. cu.ft. of gas per annum, and it was probably only fair to say that it was anticipated that the figure would increase to some extent in the future. At present it was only a small proportion of the total output of 900 mill. cu.ft.

Undisputed Need for New Works

The need for a new gas-works in Worcester was not seriously disputed by any of the objectors and he was confident that when the Inspector visited the works he would see the impossibility of erecting

a new works on the existing site. Evidence would be given by Mr. G. P. Mitchell, Managing Director and Chief Engineer of the Company, not only as to past and present outputs but as regards his estimates for the future. He estimated that by 1958 Worcester would need an output of 6 mill. cu.ft. per day. He envisaged increased use of gas in various ways, particularly in housing developments. At the present time there were restrictions on the supply of gas appliances, largely to prevent people using too much gas, owing to the general shortages from which it was well known the gas industry was suffering. The general policy was not to encourage people to have more gas-consuming appliances. It was hoped, however, that such restriction was only transitory, and it was evident that when the restriction was removed the Company's activities would be still further increased.

To meet the expected demand of 6 mill. cu.ft. per day the Company would need to have plant capable of producing 6½ mill. cu.ft. to allow a margin of safety. With a modern works and all the appropriate ancillary equipment it would be possible to operate more efficiently than on the present congested site. The programme envisaged by the Company provided for the erection of a gasholder of 4 mill cu.ft. capacity, followed by carbonizing plant of 2 mill. cu.ft. per day capacity; and then a process of replacing the existing carbonizing plant and ancillaries by such plant on the new site.

A Long Term Programme

The programme was envisaged to be completed by 1960, though it was extremely difficult to form reliable estimates in respect of the time to be taken. It was understood that if certain parts were ordered to-day the buyer would be lucky if he got them in four or five years' time. The Company would, however, reduce to the minimum the period during which it would have two gas-works functioning, because it would be obvious to anyone that to have two works running was not an efficient method of operation.

Coming to the question of the new site which had been acquired by the Gas Company, Mr. Willis put in a 6-in. location map showing what was described as the Perry Wood site. The site (comprising 29 acres) adjoined that railway marshalling yards, and nearby was the factory of the Metal Box Company. The area comprised poor agricultural land and in his submission it was in every way suitable for a gas-works. It had the added advantage that it was not far from the present works and it was near the centre of the load.

"What is perhaps the most remarkable feature about this site," said Mr. Willis, "is the fact that it is the site selected for a gas-works by the Corporation's own consultants, in their publication called 'Worcester Plan,' in which the authors, Anthony Minoprio and Hugh Spencely, say: 'The gas-works site is known to be too small for its present purpose and a new site has been selected between Perry Wood and the railway. There are already the beginnings of an industrial zone along this side of the railway. . . .' Compiled in 1946 the 'Plan' has a preface by J. B. Edwards, Chairman of the Reconstruction and Development Committee, recommending it to the world at large."

Not an Official Plan

Mr. **Neep** pointed out that the "Plan" was not an official document and that the whole matter was put forward quite broadly. He pointed to a passage in the introduction which made it clear that because of unknown factors the plan must necessarily be flexible and allow for considerable variations, particularly with regard to the industrial and residential areas. It would be a grave injustice to the Corporation to put it forward as anything more than a broad outline.

Mr. **Willis** replied that the plan was agreed in principle by the Corporation, though he did not suggest that everything in it was hard and fast.

Mr. **Neep** said the Corporation had never committed itself to the plan and he suggested that it could not be put in as evidence unless the consultants were called as witnesses.

Mr. **Willis** agreed that the preface made it clear that the proposals had not received the approval of any Government Department and did not therefore constitute a statutory town planning scheme. He turned, however, to a later passage in the "Plan" recommending that the present gas-works site should become the site for a new cattle market and abattoir.

Dealing with the objections, Mr. Willis said people always seemed to take the attitude, "I like gas, and plenty of it, but let the gas-works be placed near somebody else, and not near me." Obviously, wherever the new works was built some people would be nearer to it than they were before, but he suggested that when the Inspector examined the objections which had been put forward he would find there had been a great deal of exaggeration and misunderstanding. People might not fully appreciate the very great improvements which had been made in gas-works practice in the past few years. There was so much more done by enclosed methods nowadays that he thought one could fairly say that to-day a gas-works was no more open to objection than any ordinary industrial building. The amount of smoke and grit emitted from a well managed works was almost negligible. That fact, he recalled, was put forward at the Oxford enquiry recently, and not challenged.

"Exaggerated Objections"

Some of the objections, he submitted, were highly exaggerated; many of them came from people living on the opposite side of the railway, including people living near the Metal Box Company's factory. Apart from the Corporation there was only one other objector whose objections needed to be referred to—a Mr. J. Jones, who seemed to regard gas-works with even more distaste than some of the other objectors. Objecting to the Company's proposals he said: "Gas-works are an eyesore . . . gas is out of date . . . gas stinks . . . gas is unhealthy . . . gas kills . . . gas-works are always associated with squalor and slums."

Mr. Willis then dealt at length with the Corporation's objections, which were that the proposed site was near an already densely populated area and substantial new and contemplated housing estates and that a new works on that site was likely to have a detrimental, effect on neighbouring institutions, including infirmary, schools, isolation, tuberculosis, and other hospitals, the adjoining Perry Wood, and the Garden City. On the question of unsightliness, he said the Company would be prepared, if it would assist the objectors, to agree to the planting of trees as a screen round the works.

Mr. **Neep**: I do not want to look a gift horse in the mouth, but I cannot be bought over with trees; my objection is a fundamental one.

Alternative Site

Mr. **Willis** said the Corporation had suggested an alternative site at Blackpole, some distance from the centre of the area. The Blackpole area had, in fact, been rejected by the Ministry of Town and Country Planning as being unsuitable for industrial development. The firm of Heenan and Froude, makers of refuse destructor plant, had applied to the Droitwich Rural District Council for permission to develop part of the area for industrial purposes, and the application had been refused. It had been claimed that the development of the area for industrial purposes would interfere with the green belt which it was desired to maintain between the Cadbury factory at Blackpole and the village of Fernhill Heath. The rejection of the Heenan and Froude proposal was, he submitted, strong evidence that if the Gas Company proposed to use the site for a gas-works there would be the strongest possible objection to it on town planning grounds. A gas-works would break the green belt more effectively than the proposal of Heenan and Froude. The land in that area was more suitable for agricultural purposes, and so far as amenities were concerned the erection of a gas-works on a rural road would be far more open to objection than the proposal submitted by the Gas Company. It was wholly unsuitable and was no sort of reasonable alternative to the site which the Company had put forward.

The Company did not own this land. It was owned in part by Cadburys and in part by someone else, and from evidence which had been given at the earlier enquiry into the Heenan and Froude proposal it would appear that they would be unlikely to sell the land otherwise than under an absolute order, for which an Act of Parliament would be required.

Effect of Nationalization

There were, continued Mr. Willis, proposals in the Gas Bill for the nationalization of the gas industry. The view which the Company had taken of its statutory obligations pending the coming into force of that Bill, if it ever did come into force, was that they ought to proceed in the ordinary way to put forward proposals which were considered to be in the public interest, notwithstanding the fact that there was this Bill in the offing. It would be lamentable if all statutory undertakings were to put their books down and say they were not going to entertain any ideas of any further development because the Bills was being discussed. The Company had taken the view that it was its duty to proceed, although no doubt when the time came for developing the scheme someone else would be responsible if the Bill went through.

In conclusion Mr. Willis submitted that there was a need for the new site; that the Perry Wood site was suitable for gas-works purposes and that the Blackpole site was not a suitable site for a gas-works. Some question had been raised about the extent of the Company's activities in regard to residuals, and he was prepared to give an undertaking that it would not go beyond the scope already covered at the present works; he was also prepared to give an undertaking regarding the planting of trees to screen the new works.

Mr. Mitchell's Evidence

Mr. **G. P. Mitchell,** Managing Director and Chief Engineer, gave evidence bearing out Counsel's opening. The Company, he said, supplied gas over an area of 16 sq. miles through 94 miles of mains. There were 14,459 consumers, of whom 6,409 were ordinary and 8,050 prepayment. Average consumption per consumer in 1947 was 55,016 cu.ft. The present maximum make was 5 mill. cu.ft. per day, of which 3.8 mill. was coal gas and 1.2 mill. water gas. Between 1938 and 1947 the output had increased at an average rate of 33 mill. cu.ft. a year. For the past 10 years the war and the coal situation had imposed restrictions on progress and the Company had not been able fully to meet the needs of the public. If restrictions were removed

from the supply of gas appliances he anticipated that by 1958 they would reach an annual sale of 1,350 mill. cu.ft., including increased sales in the Droitwich area, but not counting any figures at all for the new rural area.

Existing gas storage accommodation was equal to only six hours' supply. One of the holders was in need of internal inspection, and if that was carried out the storage accommodation would be temporarily reduced to three hours' supply. He bore out Counsel's speech as regards the proposals for the erection of the new works.

The Opposition

Mr. **Neep** said that the case was peculiar in that it was so different from, for example, the Oxford case. In the Oxford case the gas-works had to be extended and the question was how should the extension be done and so on. In the Worcester case the Gas Company said that they wanted more space. They said quite frankly, that they could not have the works on the present site. The proposal was to take up the gas-works and put them somewhere fresh. That was a unique opportunity. They had only to look at the plan to see how undesirable it was that a gas-works should be right in the middle of a cathedral city. Here was a chance to take the gas-works out. "One does want to think boldly and with imagination, if one possibly can," he went on. "Far from thinking boldly or with imagination, Mr. Mitchell is simply proposing to move his gas-works in such a way that it will still remain in the City of Worcester."

The Gas Company, he said, were planning to put the gas-works right up against a new housing development. That, he thought, was a shocking proposal. The reason that the Worcester Corporation were opposing the proposal so strongly was because this was their only real chance as a corporation of fighting what was considered to be a fundamental question of town planning which arose in this matter. If the Minister made the Order asked for by the Gas Company the fundamentals of the Town and Country Planning position was settled for all time. The really big question of whether the site should be used or not would be settled against the Corporation and the very limited control left to them was as to the look of the building and the exact place where it would be put.

Trades Council Attitude

Mr. **S. R. Legge,** opposing on behalf of the Worcester Trades Council, said that there was a Bill to nationalize the gas industry. Under the Bill it was proposed that there should be 12 areas. It was possible that Worcester might become the centre of the South-Western Area. The Gas Board might close down the small works and make a vast increase in the Perry Wood gas-work to supply the whole area. He suggested that undertakings given on behalf of the present owners in regard to the acreage to be used for the works and the screening of the works with trees might be out of the control of the Company. In the event of war the outer fringe of the City would be the best place for a gas-works.

Mr. **W. J. Daniel,** opposing on behalf of residents surrounding the proposed site, said that a gas-works there would block out the glorious vista of fields and woods that they had hitherto enjoyed. The value of their property would depreciate rapidly and their health would suffer.

Mr. **Willis** said that two eminent planning experts had advised the City Council as to what they should do and no expert had been called at that inquiry to show that the two experts were not perfectly right in the conclusions that they reached. It was a little remarkable, therefore, for Mr. Neep to say that from a planning point of view the Gas Company's application was a shocking proposal. The truth was that the Corporation had changed their mind in the matter.

"Reckless Allegations"

All sorts of reckless allegations had been made as to possible damage, but the only houses which could claim to be likely to be affected at all were on the adjoining site. None of the others was affected at all.

To try to squeeze the gas-works into the minimum space would be most retrograde. He pointed out that one of the alternative sites suggested by the Corporation had been rejected by the Ministry as land for industrial development. With regard to the point raised by Mr. Legge, he said that under Clause 17 of the Gas Bill the obligations of the Gas Company would be taken over by the Gas Board.

Mr. **Tookey,** closing the inquiry, said that he would make his report in due course to the Minister.

The National Coal Board will hold a Summer School at Oxford during the week beginning Aug. 21 for 450 students from all stages of the mining industry. Among lecturers are Mr. A. Robens, M.P., Parliamentary Secretary to the Ministry of Fuel and Power, who will speak on "Coal in the National Economy," and Sir Ernest W. Smith, of the Fuel Research Board, who will deal with the question "Have we anything instead of coal?" Lord Hyndley will speak on "Progress Since Vesting Day." Discussion groups of not more than 20 will meet every day, and the programme includes visits to beauty spots in the Cotswolds, tours of the colleges, and steamer trips. Representatives of the coal-mining industries in Germany, Holland, and France will attend the School, which will have a civic reception by the Mayor and Corporation of Oxford and members of the University.

Parliamentary Notes

In the House of Commons on July 1, at question time, the Member for Taunton pointed out the extreme shortage of industrial overalls and protective clothing, and asked the President of the Board of Trade if he would arrange for an increase in the allocation of drill cloth for the manufacture of that clothing for the home market. Mr. Belcher said that he was aware of the shortage, but that production was being kept at as high a level as possible.

New Towns

The Member for Colchester put a number of questions to the Minister of Town and County Planning about the new towns for which sites had been earmarked under the 1946 Act. What progress had been made in each case; the number of houses in each that had been completed; and where none had been finished, the date by which houses would be ready for occupation. Mr. Silkin, in a written reply, named the new towns as Stevenage, Crawley, Hemel Hempstead, Harlow, Aycliffe, Peterlee, and Welwyn-Hatfield; he said that the task was one of magnitude and that the corporations concerned had been engaged principally on preliminary work; none the less, the erection of a relatively small number of houses had been commenced and a few were actually completed and occupied.

Coke (Domestic Consumers)

The Member for Normanton asked the Minister of Fuel and Power whether he would now allow boiler fuel to be supplied to householders other than those who have cooking stoves or appliances specially designed to burn those fuels, or who depend on solid fuel for water heating. Mr. Gaitskell replied that on his instructions merchants and local fuel overseers had been informed in April that while preference in the supply of boiler fuels should continue to be given to the consumers mentioned by the questioner, coke and manufactured fuel, if available, could be supplied also to any domestic consumer within the maximum permitted quantity for the summer period. Local overseers had been authorized to grant licences, where supplies permitted, for the stocking of coke during the summer up to the year's full supply, appropriate for any registered customers.

Technical Papers

Mr. H. Wilson, President of the Board of Trade, replying to Sir W. Smithers on July 8, said: I have now arranged that any person may import, either for himself or on behalf of others, single postal copies of learned, scientific, technical, and religious periodicals, and periodicals printed exclusively in a foreign language. Details will be published shortly through the usual channels.

INTENSIVE COURSE FOR GAS ENGINEERS

Arrangements have been made to commence a course at the Westminster Technical College in gas engineering (supply) on Jan. 10, 1949. The course is intended for students who have had little or no previous training in gas engineering, but it is assumed that applicants will already possess an elementary knowledge of mathematics and science. It is designed to enable them to reach the Ordinary Grade standard by September, 1949. A period of practical training with a gas undertaking will follow; and a further full-time period at a technical college, commencing in January, 1950, will take the students to the Higher Grade standard by approximately September, 1950.

The portion of the course relating to the Ordinary Grade Certificate will have the following timetable: Jan. 10-April 13; April 25-June 3; June 13-July 22; Sept. 5-Sept. 30.

Arrangements will be made for those students who desire it for the whole or part of the summer vacation, July 22 to Sept. 5, to be spent with a gas undertaking for practical training. At the conclusion of the course students will be required to pass examinations in ancillary subjects set by the College and in the main subject of Gas Engineering (Supply) set by the Board of Examiners of the Institution of Gas Engineers.

The cost of this portion of the course will be £40, excluding textbooks and instruments, which will cost approximately £10. There will be no fees for examinations in ancillary subjects but a fee of 7s. 6d. will be charged for the main subject examination. No fees will be charged for the periods of practical training with gas undertakings. Applications should be made to Dr. J. N. Long, Principal of the Westminster Technical College, at Vincent Square, Westminster, S.W.1, and applicants should advise Dr. W. T. K. Braunholtz, Secretary of the Institution of Gas Engineers.

Rayvecta Productions, Ltd., have taken over Universal Utilities, Ltd., 28a, Oxford Road, Manchester. Mr. R. H. Wright will carry on as Managing Director of the new Company. Representation in the North of England and Scotland will be handled by Messrs. M'Lusky & Blincoe, Bardon Chambers, Infirmary Street, Leeds, and the South Wales and South West England areas by Mr. W. L. Parnall, Midway, Great Brookeridge, Westbury-on-Trym, Bristol.

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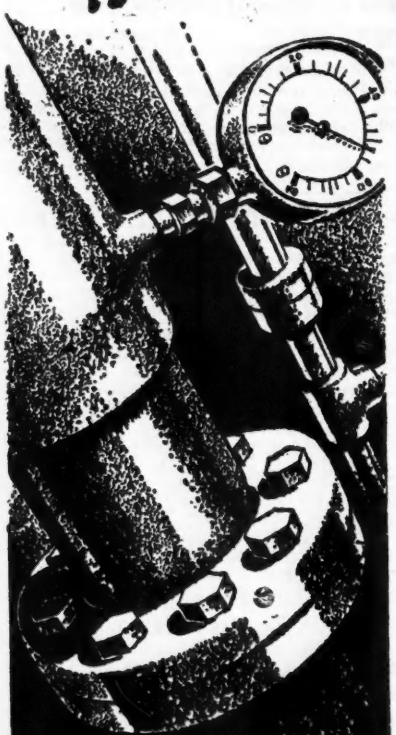

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GAS UNDERTAKINGS' RESULTS

Newcastle and Gateshead Gas Company.

The Directors have declared interim dividends of 2% on the Preference stock and 2½% on the Ordinary stock, payable on Aug. 10. These are the same rates as last year.

Commercial Gas Company

The Directors have declared dividends as follows: On the 4% Redeemable Preference stock, 1960-63, for the half-year to June 30 at the rate of 4% per annum (less tax), and on the Ordinary stock, an interim dividend on account of the year ending Dec. 31 of 2½% (less tax); both payable Sept. 1.

"GAS METERS"

Owing to enemy action at least one third of the stock copies of Mr. A. T. Gilbert's *Gas Meters*, published at 15s., post free, by Wakefield House, 185, Fleet Street, E.C.4, were destroyed, which makes the fourth edition a welcome addition to the not very extensive literature on the gas meter. Mr. Gilbert's approach is historical, for he says that it is very important that every man in the gas industry should be thoroughly conversant with the types of meters in general use. "It is therefore," he continues, "with a view to improving the understanding of meters and keeping them *on* the district only so long as they do their job efficiently that this book has been written." The book covers construction, fixing, inspection and maintenance, and is intended for engineer and managers, inspectors, fitters, and students.

COMPANY NEWS

Low Temperature Carbonization, Ltd.—The Special Resolution changing the Company's name from Low Temperature Carbonization, Ltd., to Coalite and Chemical Products, Ltd., was passed by the members at the meeting held for that purpose on July 13.

Powers-Samas

The Financial and City editorial columns of the national Press have recently been paying marked attention to the affairs of the manufacturers of the Powers-Samas punched card accounting and statistical machines. The Parent (and manufacturing) Company, until now Powers Accounting Machines, Ltd., has changed its name to Powers-Samas Accounting Machines, Ltd., while, simultaneously, its wholly owned (selling) subsidiary, until now known by that latter name, has become Powers-Samas Accounting Machines (Sales), Ltd. According to information published with a view to introducing the total capital (£520,000 in 5s. ordinary shares) of the parent company to the Exchange, the net assets of the group (after reserving for estimated income tax for 1948-49), at Feb. 29 last, were £1,813,000. The past record of continuous progress and achievement in the office appliance trade and the dividend record of the Company reflected themselves when the dealings in the 5s. shares opened actively around 42s. 6d. per share.

GAS STOCKS AND SHARES

The Berlin situation and a sharp setback on Wall Street were responsible for a quiet and dull opening in stock markets last week, but conditions became better as the week proceeded and by Friday evening there had been a general improvement in prices. The rally started on Tuesday with the news of a recovery in New York and absence of fresh shocks from the Continent, but business in mid-week remained small in volume, with fewer bargains than usual. Some fairly substantial gains were recorded in the gilt-edged market, but elsewhere rises in prices were small, with iron and steel the firmest section. A further marked improvement was noted on Thursday with hopes of a resumption of the Four-Power talks. British funds rose under the lead of Transport Stock and rises of anything from 6d. to 1s. were widespread among industrials. There were 5,952 dealings on the London Stock Exchange on Friday, bringing the week's total to 28,806, compared with 29,430 for the previous week.

The industrial market ended the week in a better state than for some weeks, the rises being led by iron and steel and road transport shares.

Turnover in gas stocks was on a very small scale, the total number of bargains falling from 244 to 218 for the week, the lowest for several months.

The week's price changes were as follows:

OFFICIAL LIST

Alliance and Dublin, Cons. Ord.	19/	— 20/	— 1s.
Cheltenham, 4 p.c. Perp. Deb. ..	93	— 98	+ 1
Croydon, 5 p.c. Perp. Deb. ..	120	— 125	+ 1
East Hull, ord.	93	— 98	+ 1
Imperial Continental, Corp. ..	105	—115	— 2
Montevideo, Ord.	110	—115	— 3
Primitiva Holdings, ord.	10/6	— 12/6	— 6d.
South Suburban, 5 p.c. Perp. Deb.	119	—124	+ 2

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